

MADE IN  
THAILAND 

# ARMATURA

Smart Campus

**DESIGNED  
& ENGINEERED  
IN THE USA**  
ARMATURA



Powered by **ARMATURA IOC**

info@armatura.co.za | www.armatura.us

# ABOUT US

## Who Are We

Armatura is a leading provider of advanced biometric solutions that bridge the gap between the physical and digital worlds. We are dedicated to delivering innovative, secure, and accurate identity recognition and access management systems to our clients worldwide. Our diverse clientele includes systems integrators, security providers, government agencies, higher education, and multinational corporations.

Our team consists of talented professionals with deep expertise in the fields of biometrics, artificial intelligence, deep learning, and computer vision. We are driven by a passion for innovation, a commitment to excellence, and a belief in the transformative power of technology to improve lives.



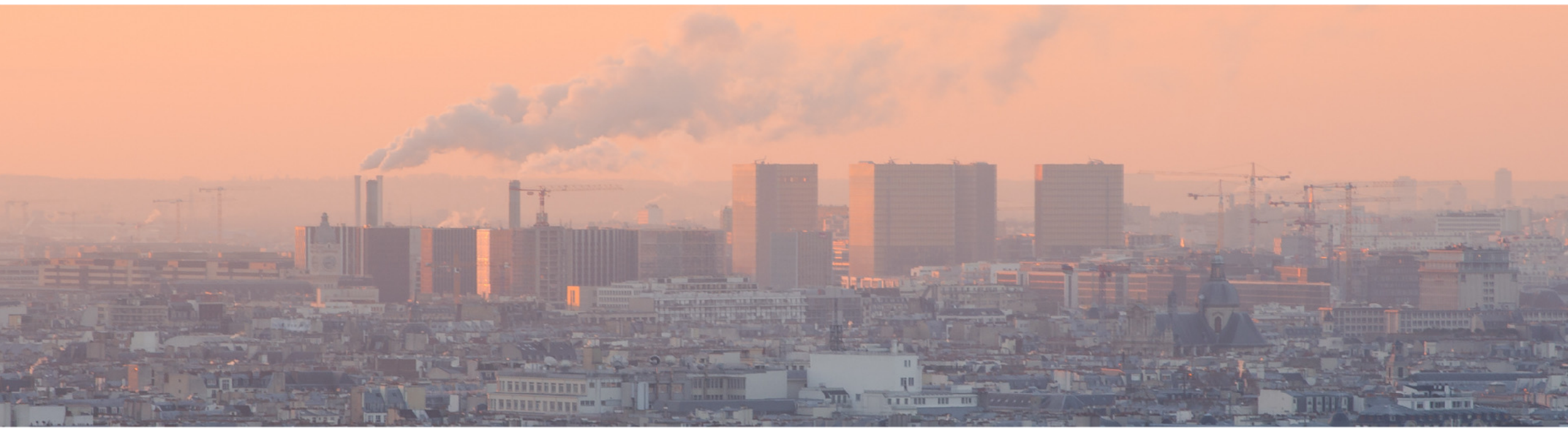
[info@armatura.co.za](mailto:info@armatura.co.za) | [www.armatura.us](http://www.armatura.us)

# WHY USE ARMATURA

- Highly secured security platform
- One security platform that offer multiple modules, no need to run multiple software's.
- Openly Integrated – SDK and API integration.
- User friendly and customizable user interface.
- Commitment to Standards and Compliance – GDPR, CCPA, NDAA and ISO standards
- Once-off access control license fees
- Free software updates
- Armatura's products support multi-RFID frequency and 100+ RFID card types
- System Architecture – Armatura Access Control System is built on a modular architecture, which allows for scalability and flexibility

# ENVIRONMENTAL IMPACT & SUSTAINABILITY

Governments around the globe have increasingly emphasized environmental protection in recent years by promoting energy saving, carbon emission reduction, and implementing related policies. For campuses and building managers, energy saving is also an important task. Through optimizing energy usage, we aim to reduce energy waste and achieve long-term goals of carbon emission reduction and sustainable development.



An aerial photograph of a city at dusk, with a digital overlay of a building's data grid. The grid is composed of blue lines and dots, forming a 3D structure that represents the building's digital twin. Various icons are placed within the grid, including a sun, a battery, a lightning bolt, and a cloud, representing different data points or systems. The background shows a cityscape with houses and trees under a twilight sky.

# ARMATURA IOC

Armatura Intelligent Operations Centre (IOC) Platform

The Future of Building Operations  
with AI and Digital Twins

# ARMATURA INTELLIGENT OPERATION CENTRE (IOC)



Armatura Intelligent Operation Centre (IOC) platform is a robust decision-making support system designed to revolutionize the management and monitoring of facilities and services. Our IOC platform is engineered to support dynamic and complex operational needs through real-time monitoring, advanced analytics, Digital Twin visualization, and seamless integration across disjointed systems in modern smart building solutions.

# ARMATURA IOC SMART CAMPUS SOLUTION

The Smart campus solution aims to achieve intelligent, digitized, and efficient campus management through modern information technology. This solution encompasses multiple functional modules, including asset management, personnel management, intelligent video surveillance, energy and sustainability management, space management, data analytics, digital twin platform, mobile application support, preventive asset maintenance, and predictive asset maintenance. Through the integration of these modules, the Smart Campus Solution not only improves operational efficiency and resource utilization but also significantly enhances student and staff experience and the quality of campus services.

## Hospital Operations Center

### Core Indicators



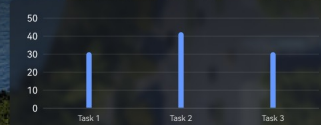
### Outpatient Information Analysis



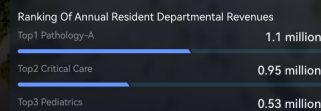
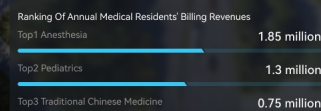
### Profiling of inpatient information



### Hospitalization Information Analysis

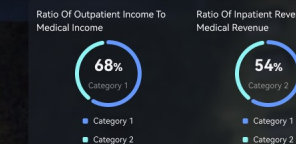


### Hospital Cost Analysis



Parking spaces: 9,691  
Pending events: 8,448  
IoT devices: 1,649

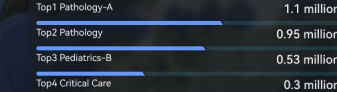
### Analysis of medical expenses



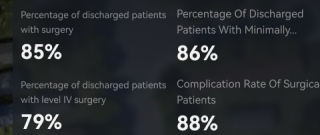
### Ranking Of Inpatient Department Revenue



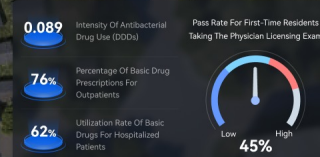
### Ranking Of Outpatient Department Revenue



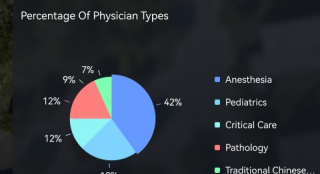
### Comprehensive Evaluation



### Analysis of medication use



### Medical Staff Qualification Analysis



# RISING INFRASTRUCTURAL COMPLEXITY IN BUILDINGS

As cities continue to develop, the infrastructure within campuses and buildings has become increasingly complex. Critical information is often stored in separate systems across disconnected departments, hindering a clear view of the operational picture and increasing the difficulty of coordinating agency efforts.



# ADDRESSING ISSUES IN SMART CAMPUS MANAGEMENT

## ✓ Information Island

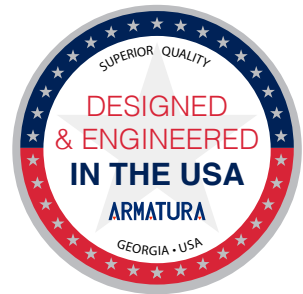
Currently, the data from various subsystems in campuses are not being managed in a unified manner, resulting in information island and inconsistent information. This situation affects management efficiency and decision support.

## ✓ Manual Personnel Management

The scheduling and shift management in campuses still heavily rely on manual processes, leading to low efficiency. It becomes challenging to track students and staff members in real-time and implement automated management workflows to improve efficiency.

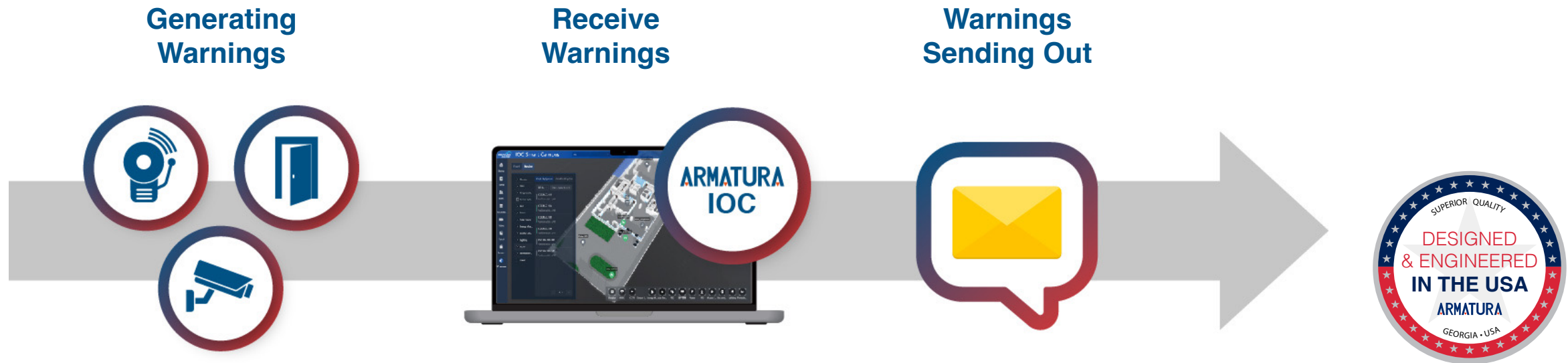
## ✓ Outdated Security Surveillance

The existing surveillance system is unable to effectively integrate with the facility management system, resulting in the inability to promptly detect and address security and maintenance issues.



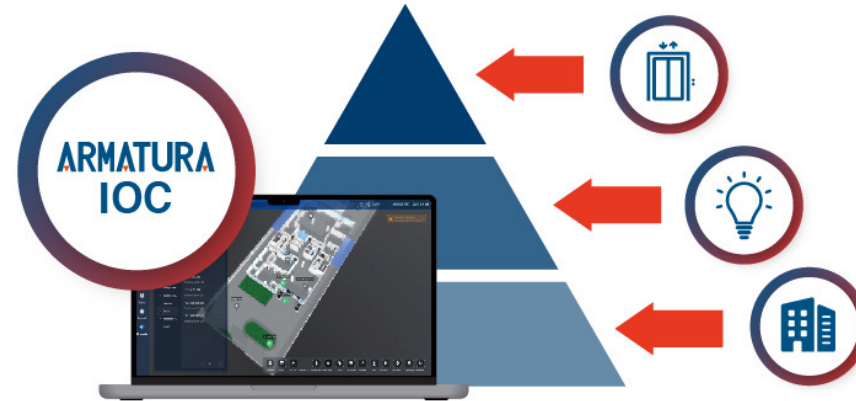
# CAMPUS SAFETY AND SECURITY MEASURES

Integrated with a set of sub-system (Access Control, Video Surveillance, Fire Alarm and Detection, etc.), IOC can receive various types of warning from them and send out notifications to users.



# FACILITY & DEVICE MANAGEMENT AND MONITORING

Integrated with a set of sub- system (Elevator Control, Lighting Control, BMS), IOC can receive various malfunction warning from them and manage warnings based on priority.



Support Human-Machine Interface (HMI) to visualize facility operational status



# CAMPUS SAFETY AND SECURITY MEASURES

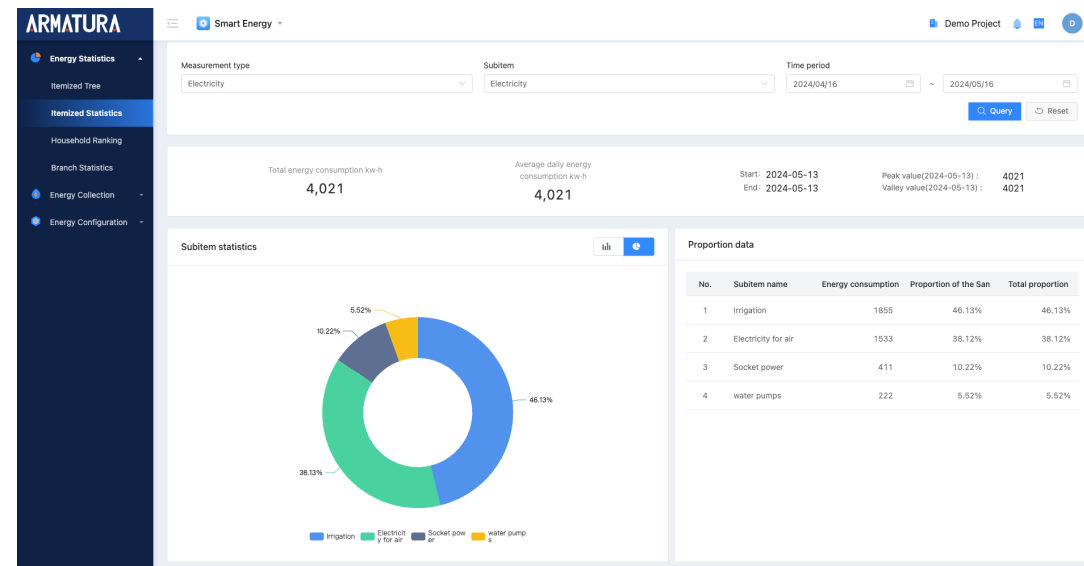
## Standard Operating Procedures (SOPs) Management under Emergency

Develop and automate Standard Operating Procedures (SOPs) via IOC to ensure consistent and efficient response is delivered under special situations (e.g. emergency). IOC also creates a historical, electronic record of actions taken during SOP execution for effective post-situational review and analysis.



# AI-POWERED ENERGY SAVING

Armatura IOC helps managers to grasp the energy consumption situation of each area in real-time and assists them in formulating different energy-saving strategies based on the energy consumption data of each area.



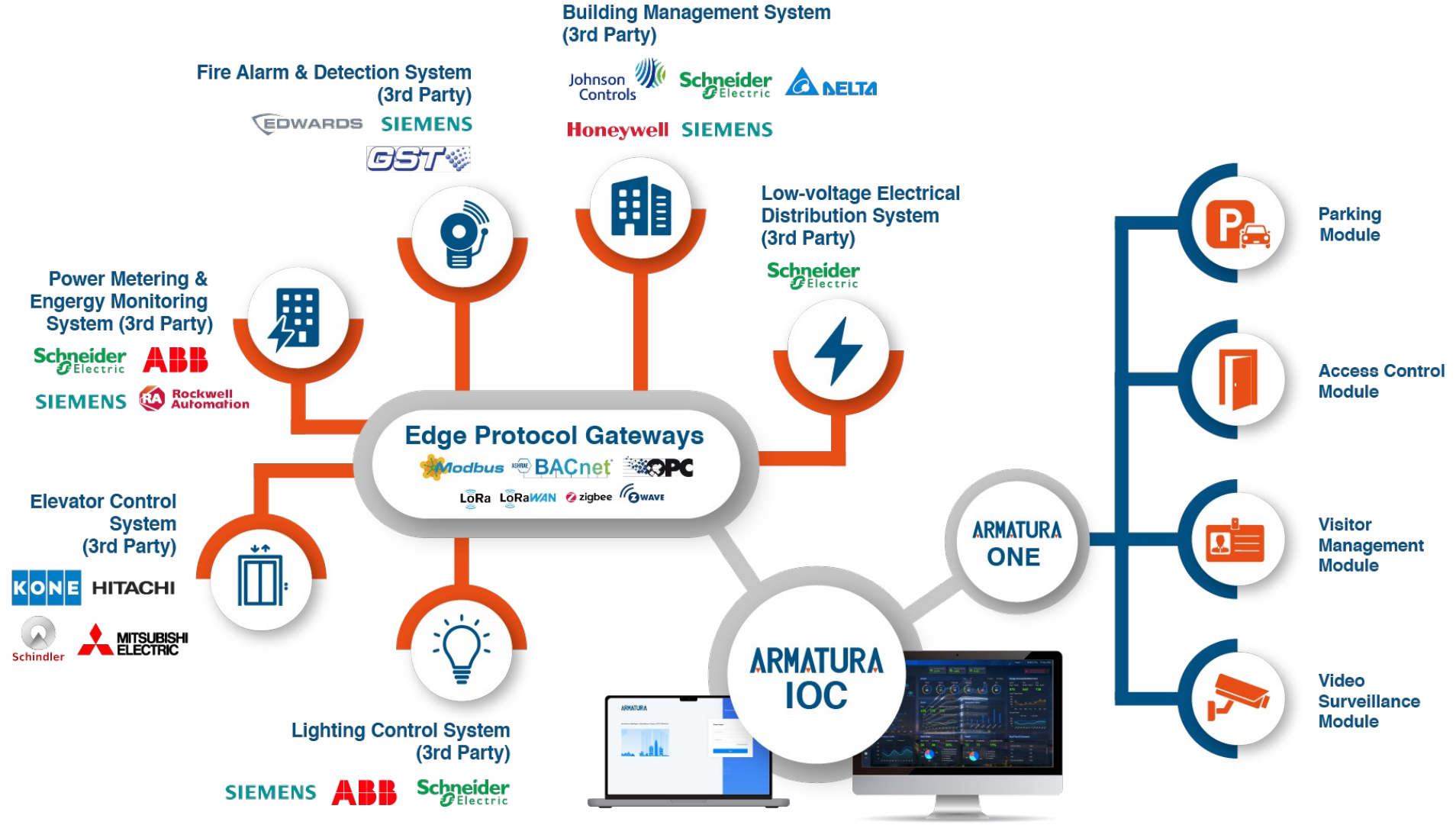
Benefit from integrating various system components within a buildings, A comprehensive view of power usage allows user to conclude a reliable and predictive energy-saving advice.

# AI-POWERED ENERGY SAVING

IOC supports 3D scene interaction and can view the overall energy usage in real-time and energy consumption trend of buildings and floors.



# ARMATURA (IOC)



# WHERE ARMATURA IOC CAN HELP

## ✓ **Enhancing Management Efficiency**

By integrating systems and implementing automation features, the efficiency of various management tasks can be significantly improved, reducing human errors.

## ✓ **Optimizing resource utilization**

Centralizing data management and sharing enable better utilization of assets and human resources, leading to lower operational costs.

## ✓ **Enhancing decision support**

Unified data management and analysis improve the accuracy and timeliness of decision-making, supporting the campus's strategic planning and operational optimization.

## ✓ **Improving space utilization**

Dynamic adjustment and real-time monitoring of space usage optimize space allocation and increase utilization.

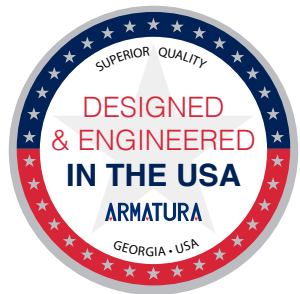
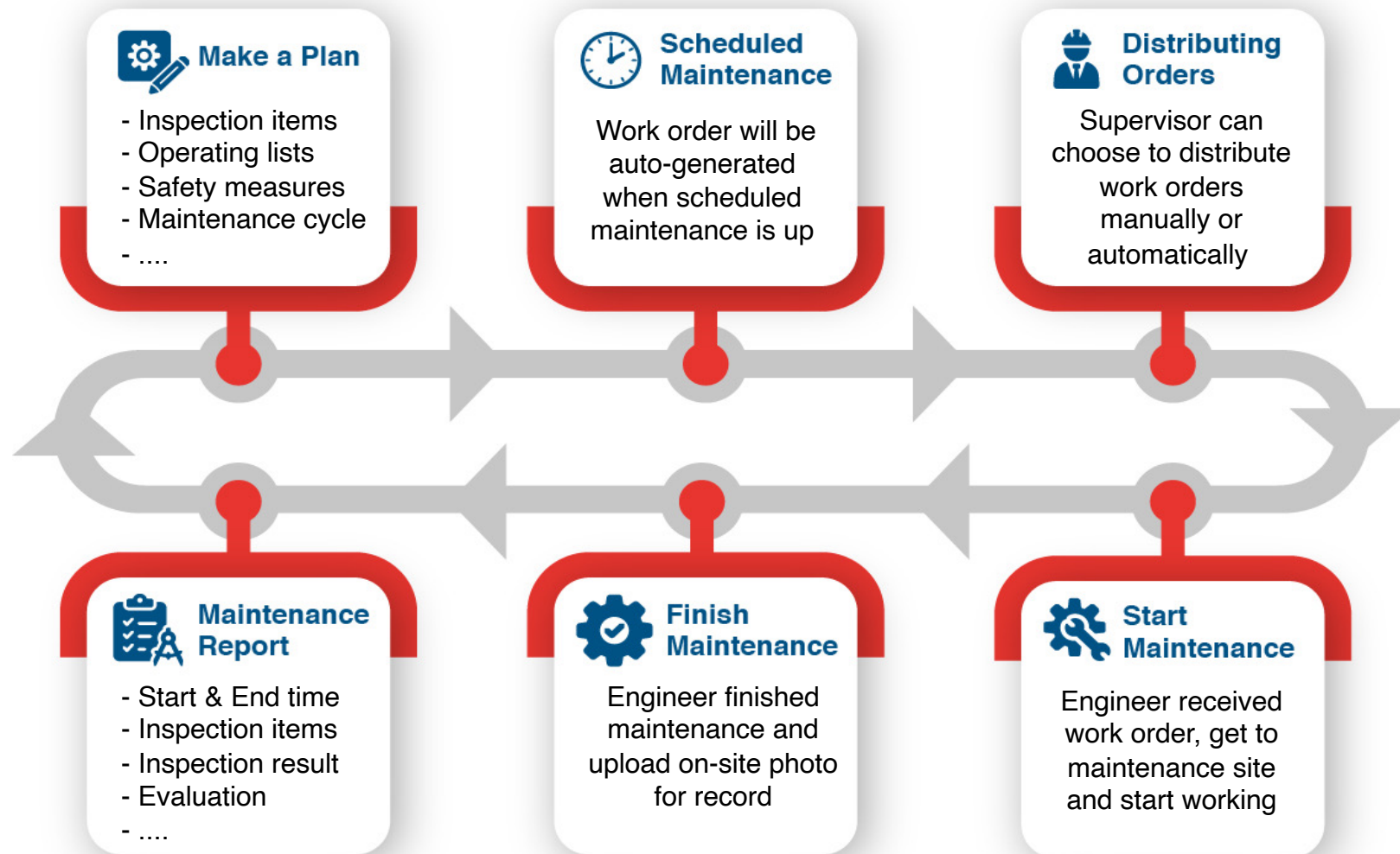
## ✓ **Improving employee satisfaction**

Simplifying scheduling and task assignment processes increases employee flexibility and satisfaction while ensuring compliance.

## ✓ **Ensuring safe campus operations**

Real-time monitoring and automated alarms enable timely handling of security and maintenance issues, ensuring the campus operates safely and smoothly.

# PREVENTIVE MAINTENANCE



# COMPLIANCE AND REGULATION MANAGEMENT

## ✓ Digitized Documentation

- Automatically stores essential compliance documents, ensuring adherence to industry standards and legal requirements.
- Document digitization for reduction of paper usage and easy to back up



## ✓ Audit Trail

- Maintains a detailed record of all maintenance activities, providing a clear, chronological history for audit purposes.



# ENVIRONMENTAL MONITORING

Integration with sensors to monitor and record environmental conditions like temperature, humidity, air quality etc.

## ✓ Temperature & Humidity Control

- Real-time monitoring of temperature and humidity levels in sensitive areas like ICUs and labs.
- Automatically monitor and maintain optimal temperature and humidity levels.



# ENVIRONMENTAL MONITORING

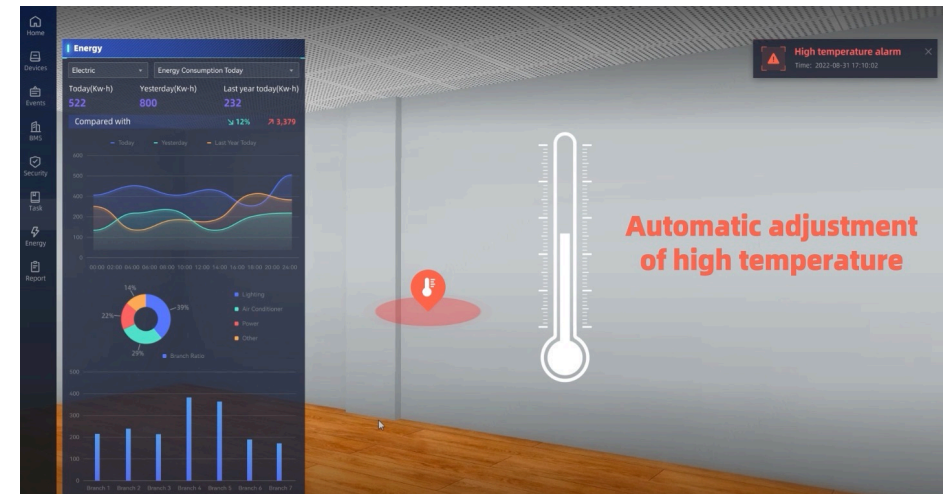
## ✓ Air Quality Tracking

- Real-time monitoring of key air quality indicators such as CO2 levels and particulates.



## ✓ Alerts and Notifications

- Setting up a threshold value for each operation data, sending out alert once it is reached.
- Automatic Work Order Registration will be carried out after alerts are sent for further inspection.



# ENERGY & SUSTAINABILITY MODULE

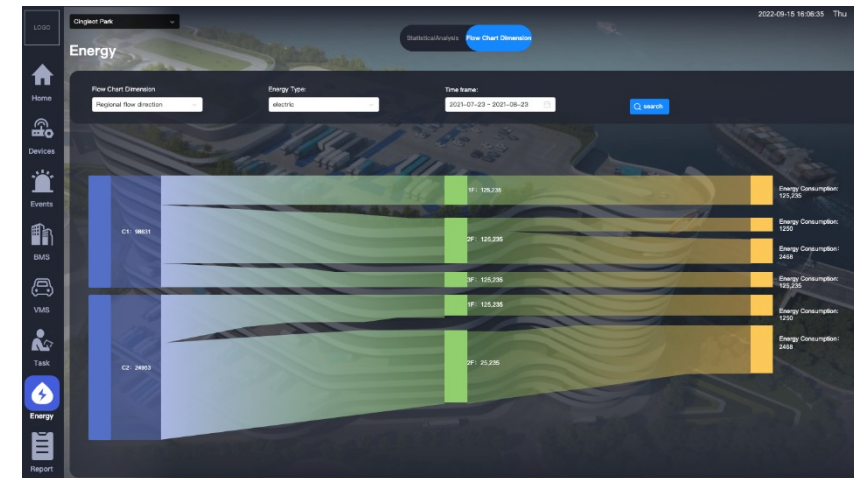
## ✓ Energy Consumption Monitoring and Control

- Continuously track energy usage, providing immediate visibility into current consumption levels.
- Utilizing artificial intelligence to evaluate energy consumption patterns, identifying inefficiencies and suggesting optimization strategies.



## ✓ Alerts and Notifications

- Setting up a threshold value for usage data, sending out alert once it is reached.
- Automatic Work Order Registration will be carried out after alerts are sent for further inspection.



# DIGITAL TWIN

ARMATURA Intelligent Operations Centre (IOC) Platform

English17:42:15 TUE2024-05-14

Home

Event

BMS

Facilit...

Video

Patrol

Report

3D m...

Event

Device

Pending events

In progress

Completed

All le...

Enter the event name to query

Elevator alarm.

Events number: DEVI2024051417350168

Events source: Elevator/RunStatus

Time of occurrence: 2024-05-14 17:35:01

Spatial location: a1/A-1/02

Detail

Low temperature.

Events number: DEVI2024051417330485

Events source: Fresh air unit/Temperature

Time of occurrence: 2024-05-14 17:33:04

Spatial location: a1/A-1/01

Detail

Current is abnormal, please check.

Events number: DEVI2024051417330181

Events source: Output MCCB/Current

Time of occurrence: 2024-05-14 17:33:02

Spatial location: a1/A-1/03

Detail

The voltage is too high, please check.

Events number: DEVI2024051417270225

Events source: Output ACB/Voltage

Time of occurrence: 2024-05-14 17:27:03

Spatial location: a1/A-1/03

Detail

Elevator alarm.

Events number: DEVI2024051417250194

Events source: Elevator/RunStatus

Time of occurrence: 2024-05-14 17:25:01

Detail

<

1/2519

>

HiveTower



Elevator

P&D

VMS

FAS

Power

Solar Ene...

Network ...

Energy M...

Access C...

Lighting

CCTV

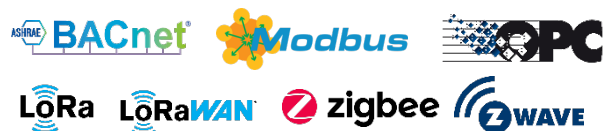
Perimeter...

HVAC

# OPEN FOR 3RD PARTY INTEGRATION

Armatura IOC supports a series of industrial standard protocols and APIs across multiple fields such as: Building Management System (BMS), Elevator Control, Physical Security, Asset management, etc. to achieve easy and low-cost integration with mainstream hard- and software in the market.

## Edge Protocol Gateways



## APIs

IoT Metadata Query Interface RESTful API  
IoT Timing Data Query Interface RESTful API  
Device Control (Downlink Command) Interface RESTful API  
Device control (Uplink Message) Query Interface RESTful API  
Device Status Query Interface RESTful API  
Device Information Query Interface RESTful API  
Personnel Information Query Interface RESTful API  
Spatial Information Query Interface RESTful API  
Querying Meter Readings Interface RESTful API  
Querying Energy Consumption Statistics RESTful API  
Alarm Message Query Interface RESTful API  
Pedestrian Records Query Interface RESTful API  
Vehicle Records Query Interface RESTful API  
Visitor Records Query Interface RESTful API

## Building Automation System (BAS) Building Management System (BMS)



## Fire Alarm and Detection System



## Low-voltage Electrical Distribution Systems



## Elevator Destination Control System



## Access Control System



## Parking Management System



## Video Management System



## Lighting Control System



## Power Metering and Energy Monitoring System



## Environmental Monitoring Sensor



## 3D Modeling Format

FBX, OBJ, GLB, GLTF, STL

Support BIM file formats:  
RVT, FBX, SKP, DGN, NWD, 3D Tiles.

Support web browser-based 3D  
graphics rendering technologies:  
WebGL-Three.js, Unity3D, UE4, UE5

# INTEGRATED ACCESS CONTROL

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# Access Control Controllers

Centralization operation enables easy management of all access points at a single location. Armatura offers complete range of access control panels for connecting and driving on-site additional devices for operations based on event-driven rules set up in the management software.

## AHSC Series

IP-Based Core Controller



### AHSC-1000

- Main controller and integration hubs
- PoE (IEEE802.3at)
- Scalable, Supports up to 32pcs AHDU-1460 and 258 readers
- Onboard Webserver
- Threat Levels and Port Failover

## AHDU Series

IP-Based Biometric Door Unit Controller



### AHDU-1160

### AHDU-1260

### AHDU-1460

- Single Door Unit (supports 1 door and 2 readers) (AHDU-1160)
- Two Door Unit (supports 2 door and 4 readers) (AHDU-1260)
- Four Door Unit (supports 4 door and 8 readers) (AHDU-1460)
- PoE (IEEE802.3at)
- Scalable, Supports up to 24pcs AHEB expansion boards
- Advanced Access Control Functions
- 4-States Supervised and Programmable Inputs (Active, In-Active, Open, Short)



## AHEB Series

IO Expansion Board



### AHEB-0808

- 8 Inputs and 8 Outputs (AHEB-0808)
- 16 Inputs and 2 Outputs (AHEB-1602)
- Scalable
- 4-States Supervised and Programmable Inputs (Active, In-Active, Open, Short)



### AHEB-1602

# Access Control Readers



Armatura provides a wide variety of external readers with IP68 waterproof and dustproof levels, IK10 impact resistance and fire resistance levels for an unparalleled standard of security and robustness of security applications.

## EP10 Series

All Weather Outdoor  
Multi-tech Smart Reader



### EP10C

- K10 & IP68 Protection Level
- Supports 100+ card types and dual RFID frequencies
- Supports Mobile Credentials (Bluetooth & NFC)
- Mullion Mount Design
- Supports Asian / European / Single-gang box back-box spacing

## EP20 Series

All Weather Outdoor  
Multi-tech Smart Reader



### EP20C

### EP20CK

### EP20CQ

### EP20CKQ

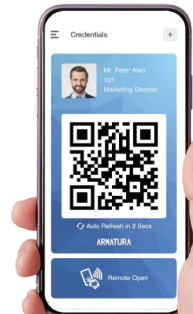
- Up to IK10 & IP68 Protection Level
- Physical keypad
- Supports 100+ card types and dual RFID frequencies
- Supports Mobile Credentials (Bluetooth & NFC & QR code)
- Supports Asian / European / Single-gang box

## VG10CKQ

All Weather Outdoor  
Multi-tech Smart Reader



- Up to IK07 & IP66 Protection Level
- Physical keypad
- Supports 100+ card types and dual RFID frequencies
- Supports Mobile Credentials (Bluetooth & NFC & QR code)
- Interactive Experiences with LED Programmability



# Biometric Access Control Readers



Armatura offers a diverse range of external biometric readers that incorporate facial and palm recognition technology. These readers are designed to meet IP66 waterproof and dustproof standards, ensuring exceptional security and durability for various security applications.

## EP30CF

All Weather Outdoor Multi-tech Fingerprint Reader



- Up to IP65 Protection Level
- Advanced Fingerprint Scanning Technology
- Supports 100+ card types and dual RFID frequencies
- Supports Mobile Credentials (Bluetooth & NFC)

## FT10CMQ

Contactless Biometric Standalone Terminal



- Up to IP66 Protection Level
- Multimodal biometric technology, touchless palm and face recognition
- Supports 100+ card types and dual RFID frequencies
- Supports Mobile Credentials (Bluetooth & NFC & QR code)
- Supports video intercom function (SIP V2.0)
- Supports Asian / European / Single-gang box

# Mobile Application

## ARMATURA ID

Armatura Mobile Credential App

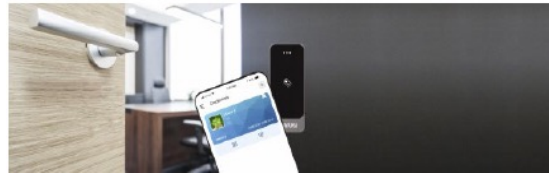


Armatura offers three innovative access modes for enhanced convenience and security. The Remote Mode (BLE) allows users to unlock Armatura devices remotely through the mobile app. Card Mode turns mobile phones into access credentials, while QR Code Mode enables access by scanning QR codes. Armatura's access modes provide flexible and efficient solutions for various access control needs.



### Remote Mode (BLE)

Remote mode offers users the experience of remotely unlocking any Armatura access control device by tapping the button in the Armatura ID mobile app for long distance access in mobile (Android/ iOS) device, it satisfies the needs of long-distance operation.



### Card Mode (BLE/NFC)

Card mode utilizes mobile phones to function as a user's credential to enter offices or other business facilities. In card mode, simply present your smartphone (Android/ iOS) to the reader to gain access.

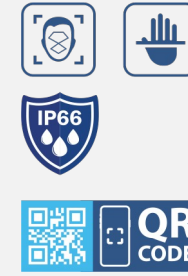


### Card Mode (BLE/NFC)

The Armatura ID mobile app (Android/ iOS) provides QR Code credentials as an option to open doors with Armatura readers. With QR codes replacing conventional physical keys, visitors are enabled to access designated area by scanning their QR codes.



# Biometric Access Control Standalone Terminals



Armatura offer complete systems that enable both access control and time & attendance management. With various access control solutions with face recognition, palm recognition, mobile credential and RFID identification for entrance, exit and all kinds of access points.

## OmniAC20

Contactless Biometric Standalone Terminal



- Multi-Biometric technology combining palm and face recognition
- IP66 water & dustproof protection rating
- Slim design & form factor for a modern aesthetic design
- Supports 125 kHz and 13.56 MHz frequency RFID
- Supports Dynamic QR Code
- Mobile Credentials Remote Mode & Card Mode) (Coming Soon)
- Video Intercom (SIP V2.0)

## OmniAC30

Contactless Biometric Standalone Terminal



- Multi-Biometric technology combining palm and face recognition
- IP66 water & dustproof protection rating
- Supports 125 kHz and 13.56 MHz frequency RFID
- Supports PoE (IEEE802.3at/af)
- Supports Dynamic QR Code
- Mobile Credentials Remote Mode & Card Mode) (Coming Soon)
- Video Intercom (SIP V2.0)

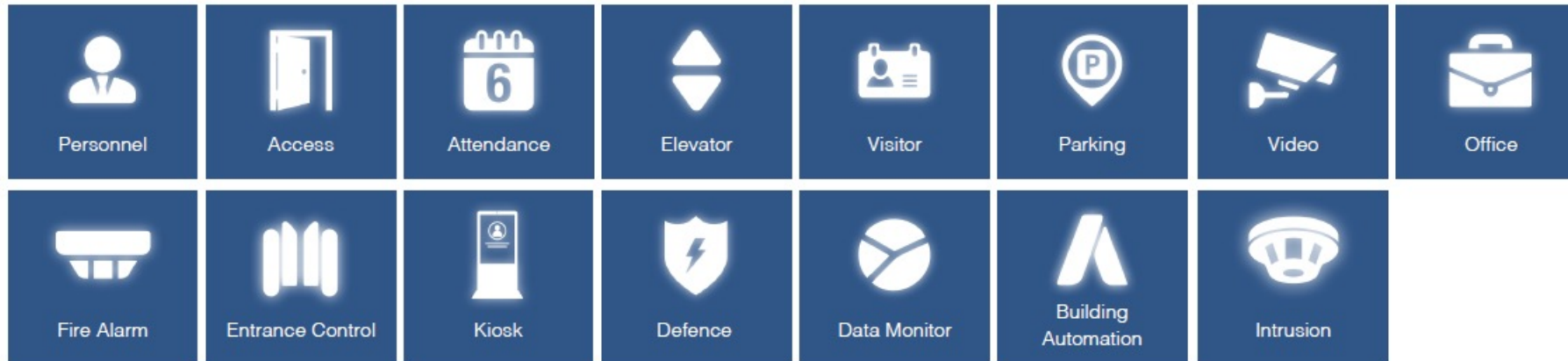
# Software ARMATURA ONE

Web-Based Versatile Security Platform

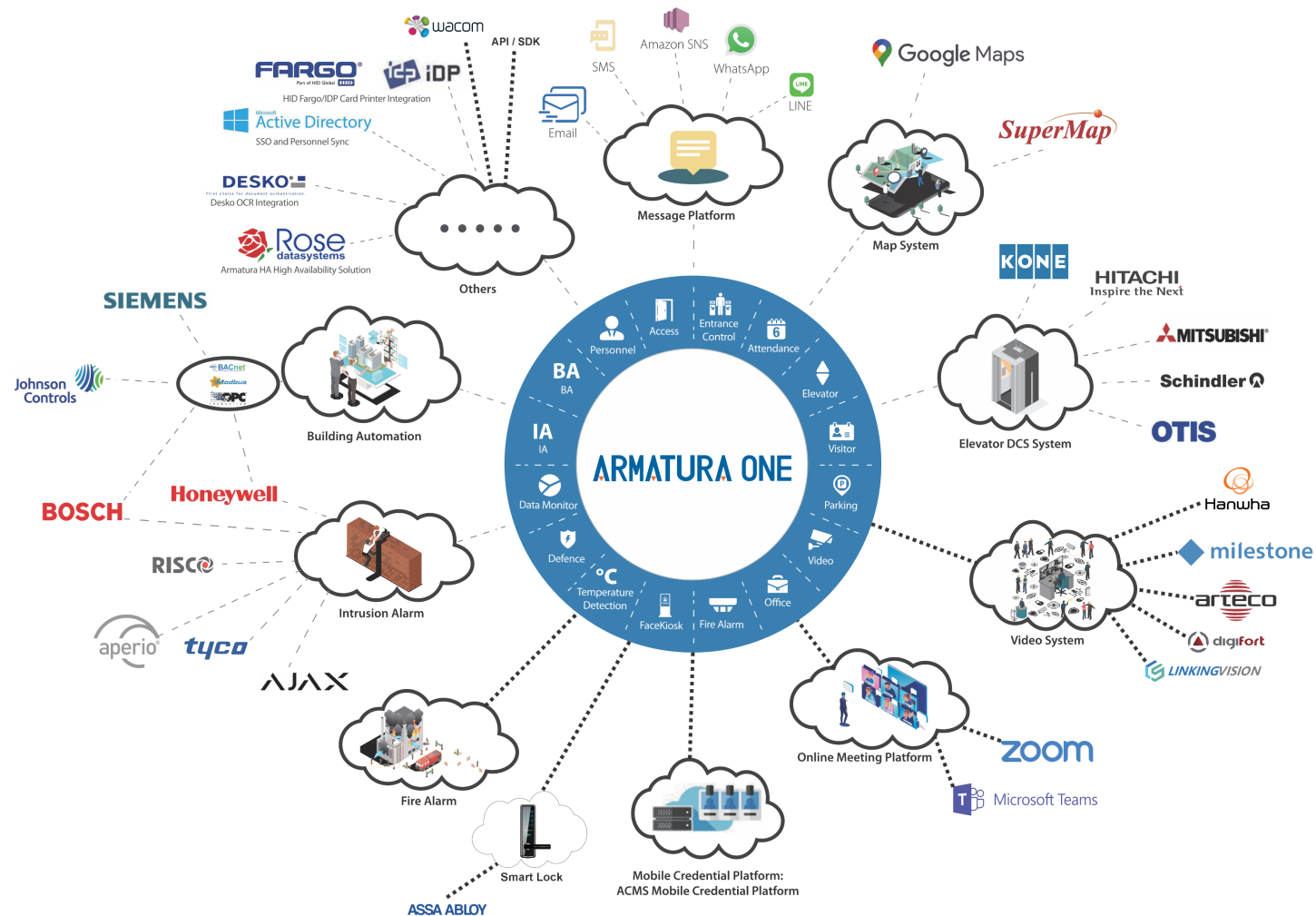


Armatura One is the ultimate “All-in-One” web-based security platform developed by Armatura. It contains multiple integrated modules:

Personnel, Access Control, Time & Attendance, Elevator, Visitor, Parking Management, Video Management System, Office, Fire Alarm, Entrance Control, FaceKiosk, Temperature Detection, Defence, Data Monitor, Building Automation and Intrusion.



# VERSATILE INTEGRATION



# CERTIFIED OF DATA PROTECTION

Data and privacy protection are always one of the primary concerns of Armatura; all of Armatura's engineers and researchers have done their best to deliver Armatura's system with the highest level of data protection in the industry.

Armatura's systems, developed by experienced R&D teams, which reached the CMMI5 standard, are GDPR and CCPA compliant and are certified by ISO 27001, 27701, 27017 data protection measures.

All Armatura's communications are encrypted with the best measures by using different encryption methods such as AES128, AES256, TLS1.2, etc., and all vital information is stored in certified EAL6+ crypto chips, with access routes securely blocked.



# THANK YOU

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